

SEQUENCE LISTING

COPY

<110> Lo, Kin-Ming
Sun, Yaping
Gillies, Stephen D.

<120> Expression and Export of Interferon-Alpha Proteins as
Fc Fusion Proteins

<130> LEX-009

<140>

<141>

<150> US 60/134,895

<151> 1999-05-19

<160> 29

<170> PatentIn Ver. 2.0

<210> 1
<211> 498
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(498)
<223> Human IFN alpha DNA sequence

<400> 1
tgt gat ctg cct cag acc cac agc ctg ggt aat agg agg gcc ttg ata 48
Cys Asp Leu Pro Gln Thr His Ser Leu Gly Asn Arg Arg Ala Leu Ile
1 5 10 15

ctc ctg gca caa atg gga aga atc tct cct ttc tcc tgc ctg aag gac 96
Leu Leu Ala Gln Met Gly Arg Ile Ser Pro Phe Ser Cys Leu Lys Asp
20 25 30

aga cat gac ttt gga ttc ccc cag gag gag ttt gat ggc aac cag ttc 144
Arg His Asp Phe Gly Phe Pro Gln Glu Phe Asp Gly Asn Gln Phe
35 40 45

cag aag gct caa gcc atc cct gtc ctc cat gag atg atc cag cag acc 192
Gln Lys Ala Gln Ala Ile Pro Val Leu His Glu Met Ile Gln Gln Thr
50 55 60

ttc aat ctc ttc agc aca aag gac tca tct gct act tgg gaa cag agc 240
Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Thr Trp Glu Gln Ser
65 70 75 80

ctc cta gaa aaa ttt tcc act gaa ctt aac cag cag ctg aat gac ctg 288
Leu Leu Glu Lys Phe Ser Thr Glu Leu Asn Gln Gln Leu Asn Asp Leu
85 90 95

gaa gcc tgc gtg ata cag gag gtt ggg gtg gaa gag act ccc ctg atg 336

Glu Ala Cys Val Ile Gln Glu Val Gly Val Glu Glu Thr Pro Leu Met			
100	105	110	
aat gtg gac tcc atc ctg gct gtg aag aaa tac ttc caa aga atc act			384
Asn Val Asp Ser Ile Leu Ala Val Lys Lys Tyr Phe Gln Arg Ile Thr			
115	120	125	
ctt tat ctg aca gag aag aaa tac agc cct tgt gcc tgg gag gtt gtc			432
Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val			
130	135	140	
aga gca gaa atc atg aga tcc ttc tct tta tca aaa att ttt caa gaa			480
Arg Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Lys Ile Phe Gln Glu			
145	150	155	160
aga tta agg aag aag gat			498
Arg Leu Arg Lys Lys Asp			
165			

<210> 2
<211> 166
<212> PRT
<213> Homo sapiens

<400> 2			
Cys Asp Leu Pro Gln Thr His Ser Leu Gly Asn Arg Arg Ala Leu Ile			
1	5	10	15
Leu Leu Ala Gln Met Gly Arg Ile Ser Pro Phe Ser Cys Leu Lys Asp			
20	25	30	
Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Asp Gly Asn Gln Phe			
35	40	45	
Gln Lys Ala Gln Ala Ile Pro Val Leu His Glu Met Ile Gln Gln Thr			
50	55	60	
Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Thr Trp Glu Gln Ser			
65	70	75	80
Leu Leu Glu Lys Phe Ser Thr Glu Leu Asn Gln Gln Leu Asn Asp Leu			
85	90	95	
Glu Ala Cys Val Ile Gln Glu Val Gly Val Glu Glu Thr Pro Leu Met			
100	105	110	
Asn Val Asp Ser Ile Leu Ala Val Lys Lys Tyr Phe Gln Arg Ile Thr			
115	120	125	
Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val			
130	135	140	
Arg Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Lys Ile Phe Gln Glu			
145	150	155	160
Arg Leu Arg Lys Lys Asp			

<210> 3
<211> 696
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(696)
<223> Human Fc DNA sequence

<400> 3		
gag ccc aaa tct tct gac aaa act cac aca tgc cca c	cca gca	48
Glu Pro Lys Ser Ser Asp Lys Thr His Thr Cys Pro P	Pro Ala	
1 5 10	15	
cct gaa ctc ctg ggg gga ccg tca gtc ttc ctc ttc c	aaa ccc	96
Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe P	Lys Pro	
20 25		
aag gac acc ctc atg atc tcc cgg acc cct gag gtc a	gtg gtg	144
Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val T	Val Val	
35 40		
gtg gac gtg agc cac gaa gac cct gag gtc aag ttc a	tac gtg	192
Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe I	Tyr Val	
50 55 60		
gac ggc gtg gag gtg cat aat gcc aag aca aag ccg c	gag cag	240
Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro I	Glu Gln	
65 70 75	80	
tac aac agc acg tac cgt gtg gtc agc gtc ctc acc c	cac cag	288
Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr V	His Gln	
85 90	95	
gac tgg ctg aat ggc aag gag tac aag tgc aag gtc t	aaa gcc	336
Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val S	Lys Ala	
100 105		
ctc cca gcc ccc atc gag aaa acc atc tcc aaa gcc a	cag ccc	384
Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala I	Gln Pro	
115 120		
cga gaa cca cag gtg tac acc ctg ccc cca tca ccg c	atg acc	432
Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg C	Met Thr	
130 135 140		
aag aac cag gtc agc ctg acc tgc ctg gtc aaa ggc t	ccc agc	480
Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly I	Pro Ser	
145 150 155	160	
gac atc gcc gtg gag tgg gag agc aat ggg cag ccg c	aac tac	528
Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro C	Asn Tyr	
165 170	175	

aag acc acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc tat		576
Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr		
180	185	190
agc aag ctc acc gtg gac aag agc agg tgg cag cag ggg aac gtc ttc		624
Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe		
195	200	205
tca tgc tcc gtg atg cat gag gct ctg cac aac cac tac acg cag aag		672
Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys		
210	215	220
agc ctc tcc ctg tcc ccg ggt aaa		696
Ser Leu Ser Leu Ser Pro Gly Lys		
225	230	

<210> 4			
<211> 232			
<212> PRT			
<213> Homo sapiens			
<400> 4			
Glu Pro Lys Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala			
1	5	10	15
Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro			
20	25	30	
Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val			
35	40	45	
Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val			
50	55	60	
Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln			
65	70	75	80
Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln			
85	90	95	
Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala			
100	105	110	
Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro			
115	120	125	
Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr			
130	135	140	
Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser			
145	150	155	160
Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr			
165	170	175	

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
180 185 190
Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
195 200 205
Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
210 215 220
Ser Leu Ser Leu Ser Pro Gly Lys
225 230

<210> 5
<211> 27
<212> DNA
<213> Homo sapiens

<220>
<223> Forward PCR primer

<400> 5
cccggttaaa tgtgatctgc ctcagac 27

<210> 6
<211> 26
<212> DNA
<213> Homo sapiens

<400> 6
ctcgagtcaa tccttcctcc ttaatc 26

<210> 7
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<223> IFN alpha consensus sequence wherein, Xaa at any position besides positions 24,31,70 and 129 represents any amino acid.

<220>
<223> Xaa24 can be Ile or Leu, Xaa31 can be Lys or Gln, Xaa70 can be Thr or Ser and Xaa 129 can be Leu or Val.

<400> 7
Cys Asp Leu Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Leu Xaa
1 5 10 15
Xaa Xaa Xaa Met Xaa Xaa Xaa Ser Pro Xaa Xaa Cys Leu Xaa Xaa
20 25 30

Arg Xaa Asp Phe Xaa Xaa Pro Xaa Glu Xaa Xaa Xaa Xaa Gln Xaa

35	40	45
Xaa Xaa Xaa Gln Ala Xaa Xaa Val Leu Xaa Xaa Xaa Xaa Gln Gln Xaa		
50	55	60
Xaa Xaa Leu Phe Xaa Xaa Xaa Xaa Ser Ala Xaa Trp Xaa Xaa Thr		
65	70	75
Leu Leu Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Gln Gln Leu Xaa Asp Leu		
85	90	95
Xaa Xaa Cys Xaa Leu Xaa		
100	105	110
Xaa Val Xaa Xaa Xaa Leu Xaa Val Xaa Xaa Tyr Phe Xaa Xaa Ile Xaa		
115	120	125
Xaa Tyr Leu Xaa Xaa Lys Xaa Xaa Ser Xaa Cys Ala Trp Glu Xaa Xaa		
130	135	140
Xaa Xaa Xaa Xaa Met Arg Xaa Xaa Ser Xaa Xaa Xaa Xaa Leu Xaa Xaa		
145	150	155
160		
Arg Leu		
<210> 8		
<211> 166		
<212> PRT		
<213> Homo sapiens		
<220>		
<223> Human IFN alpha-1 protein		
<400> 8		
Cys Asp Leu Pro Glu Thr His Ser Leu Asp Asn Arg Arg Thr Leu Met		
1	5	10
15		
Leu Leu Ala Gln Met Ser Arg Ile Ser Pro Ser Ser Cys Leu Met Asp		
20	25	30 .
Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Asp Gly Asn Gln Phe		
35	40	45
Gln Lys Ala Pro Ala Ile Ser Val Leu His Glu Leu Ile Gln Gln Ile		
50	55	60
Phe Asn Leu Phe Thr Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Asp		
65	70	75
80		
Leu Leu Asp Lys Phe Cys Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu		
85	90	95
Glu Ala Cys Val Met Gln Glu Glu Arg Val Gly Glu Thr Pro Leu Met		
100	105	110

Asn Ala Asp Ser Ile Leu Ala Val Lys Lys Tyr Phe Arg Arg Ile Thr
115 120 125
Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
130 135 140
Arg Ala Glu Ile Met Arg Ser Leu Ser Leu Ser Thr Asn Leu Gln Glu
145 150 155 160
Arg Leu Arg Arg Lys Glu
165

<210> 9
<211> 165
<212> PRT
<213> Homo sapiens

<220>
<223> Human IFN alpha-2 protein

<400> 9
Cys Asp Leu Pro Gln Thr His Ser Leu Gly Ser Arg Arg Thr Leu Met
1 5 10 15
Leu Leu Ala Gln Met Arg Lys Ile Ser Leu Phe Ser Cys Leu Lys Asp
20 25 30
Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Gly Asn Gln Phe Gln
35 40 45
Lys Ala Glu Thr Ile Pro Val Leu His Glu Met Ile Gln Gln Ile Phe
50 55 60
Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr Leu
65 70 75 80
Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu Glu
85 90 95
Ala Cys Val Ile Gln Gly Val Gly Val Thr Glu Thr Pro Leu Met Lys
100 105 110
Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr Leu
115 120 125
Tyr Leu Lys Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val Arg
130 135 140
Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Thr Asn Leu Gln Glu Ser
145 150 155 160
Leu Arg Ser Lys Glu
165

<210> 10

<211> 166
<212> PRT
<213> Homo sapiens

<220>
<223> Human IFN alpha-4 protein

<400> 10
Cys Asp Leu Pro Gln Thr His Ser Leu Gly Asn Arg Arg Ala Leu Ile
1 5 10 15

Leu Leu Ala Gln Met Gly Arg Ile Ser His Phe Ser Cys Leu Lys Asp
20 25 30

Arg His Asp Phe Gly Phe Pro Glu Glu Glu Phe Asp Gly His Gln Phe
35 40 45

Gln Lys Thr Gln Ala Ile Ser Val Leu His Glu Met Ile Gln Gln Thr
50 55 60

Phe Asn Leu Phe Ser Thr Glu Asp Ser Ser Ala Ala Trp Glu Gln Ser
65 70 75 80

Leu Leu Glu Lys Phe Ser Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu
85 90 95

Glu Ala Cys Val Ile Gln Glu Val Gly Val Glu Glu Thr Pro Leu Met
100 105 110

Asn Val Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr
115 120 125

Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Ile Met Arg Ser Leu Ser Phe Ser Thr Asn Leu Gln Lys
145 150 155 160

Arg Leu Arg Arg Lys Asp
165

<210> 11
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<223> Human IFN alpha-5 protein

<400> 11
Cys Asp Leu Pro Gln Thr His Ser Leu Ser Asn Arg Arg Thr Leu Met
1 5 10 15

Ile Met Ala Gln Met Gly Arg Ile Ser Pro Phe Ser Cys Leu Lys Asp
20 25 30

Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Asp Gly Asn Gln Phe
35 40 45

Gln Lys Ala Gln Ala Ile Ser Val Leu His Glu Met Ile Gln Gln Thr
50 55 60

Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Thr Trp Asp Glu Thr
65 70 75 80

Leu Leu Asp Lys Phe Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu
85 90 95

Glu Ala Cys Met Met Gln Glu Val Gly Val Glu Asp Thr Pro Leu Met
100 105 110

Asn Val Asp Ser Ile Leu Thr Val Arg Lys Tyr Phe Gln Arg Ile Thr
115 120 125

Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Ala Asn Leu Gln Glu
145 150 155 160

Arg Leu Arg Arg Lys Glu
165

<210> 12
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<223> HUman IFN alpha-6 protein

<400> 12
Cys Asp Leu Pro Gln Thr His Ser Leu Gly His Arg Arg Thr Met Met
1 5 10 15

Leu Leu Ala Gln Met Arg Arg Ile Ser Leu Phe Ser Cys Leu Lys Asp
20 25 30

Arg His Asp Phe Arg Phe Pro Gln Glu Glu Phe Asp Gly Asn Gln Phe
35 40 45

Gln Lys Ala Glu Ala Ile Ser Val Leu His Glu Val Ile Gln Gln Thr
50 55 60

Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser Val Ala Trp Asp Glu Arg
65 70 75 80

Leu Leu Asp Lys Leu Tyr Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu
85 90 95

Glu Ala Cys Val Met Gln Glu Val Trp Val Gly Gly Thr Pro Leu Met
100 105 110

Asn Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr
115 120 125

Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Ile Met Arg Ser Phe Ser Ser Ser Arg Asn Leu Gln Glu
145 150 155 160

Arg Leu Arg Arg Lys Glu
165

<210> 13

<211> 166

<212> PRT

<213> Homo sapiens

<220>

<223> Human IFN alpha-7 protein

<400> 13

Cys Asp Leu Pro Gln Thr His Ser Leu Arg Asn Arg Arg Ala Leu Ile
1 5 10 15

Leu Leu Ala Gln Met Gly Arg Ile Ser Pro Phe Ser Cys Leu Lys Asp
20 25 30

Arg His Glu Phe Arg Phe Pro Glu Glu Phe Asp Gly His Gln Phe
35 40 45

Gln Lys Thr Gln Ala Ile Ser Val Leu His Glu Met Ile Gln Gln Thr
50 55 60

Phe Asn Leu Phe Ser Thr Glu Asp Ser Ser Ala Ala Trp Glu Gln Ser
65 70 75 80

Leu Leu Glu Lys Phe Ser Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu
85 90 95

Glu Ala Cys Val Ile Gln Glu Val Gly Val Glu Glu Thr Pro Leu Met
100 105 110

Asn Glu Asp Phe Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr
115 120 125

Leu Tyr Leu Met Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Ile Met Arg Ser Phe Ser Phe Ser Thr Asn Leu Lys Lys
145 150 155 160

Gly Leu Arg Arg Lys Asp
165

<210> 14
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<223> Human IFN alpha-8 protein

<400> 14
Cys Asp Leu Pro Gln Thr His Ser Leu Gly Asn Arg Arg Ala Leu Ile
1 5 10 15
Leu Leu Ala Gln Met Arg Arg Ile Ser Pro Phe Ser Cys Leu Lys Asp
20 25 30
Arg His Asp Phe Glu Phe Pro Gln Glu Glu Phe Asp Asp Lys Gln Phe
35 40 45
Gln Lys Ala Gln Ala Ile Ser Val Leu His Glu Met Ile Gln Gln Thr
50 55 60
Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Leu Asp Glu Thr
65 70 75 80
Leu Leu Asp Glu Phe Tyr Ile Glu Leu Asp Gln Gln Leu Asn Asp Leu
85 90 95
Glu Val Leu Cys Asp Gln Glu Val Gly Val Ile Glu Ser Pro Leu Met
100 105 110
Tyr Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr
115 120 125
Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Ser Cys Ala Trp Glu Val Val
130 135 140
Arg Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Ile Asn Leu Gln Lys
145 150 155 160
Arg Leu Lys Ser Lys Glu
165

<210> 15
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<223> Human IFN alpha-10 protein

<400> 15
Cys Asp Leu Pro Gln Thr His Ser Leu Gly Asn Arg Arg Ala Leu Ile
1 5 10 15
Leu Leu Gly Gln Met Gly Arg Ile Ser Pro Phe Ser Cys Leu Lys Asp
20 25 30

Arg His Asp Phe Arg Ile Pro Gln Glu Glu Phe Asp Gly Asn Gln Phe
35 40 45

Gln Lys Ala Gln Ala Ile Ser Val Leu His Glu Met Ile Gln Gln Thr
50 55 60

Phe Asn Leu Phe Ser Thr Glu Asp Ser Ser Ala Ala Trp Glu Gln Ser
65 70 75 80

Leu Leu Glu Lys Phe Ser Thr Glu Leu Tyr Gln Gln Leu Asn Asp Leu
85 90 95

Glu Ala Cys Val Ile Gln Glu Val Gly Val Glu Glu Thr Pro Leu Met
100 105 110

Asn Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr
115 120 125

Leu Tyr Leu Ile Glu Arg Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Ile Met Arg Ser Leu Ser Phe Ser Thr Asn Leu Gln Lys
145 150 155 160

Arg Leu Arg Arg Lys Asp
165

<210> 16
<211> 170
<212> PRT
<213> Homo sapiens

<220>
<223> Human IFN alpha-14 protein

<400> 16
Cys Ser Leu Gly Cys Asn Leu Ser Gln Thr His Ser Leu Asn Asn Arg
1 5 10 15

Arg Thr Leu Met Leu Met Ala Gln Met Arg Arg Ile Ser Pro Phe Ser
20 25 30

Cys Leu Lys Asp Arg His Asp Phe Glu Phe Pro Gln Glu Glu Phe Asp
35 40 45

Gly Asn Gln Phe Gln Lys Ala Gln Ala Ile Ser Val Leu His Glu Met
50 55 60

Met Gln Gln Thr Phe Asn Leu Phe Ser Thr Lys Asn Ser Ser Ala Ala
65 70 75 80

Trp Asp Glu Thr Leu Leu Glu Lys Phe Tyr Ile Glu Leu Phe Gln Gln
85 90 95

Met Asn Asp Leu Glu Ala Cys Val Ile Gln Glu Val Gly Val Glu Glu

	100	105	110
Thr Pro Leu Met Asn Glu Asp Ser Ile Leu Ala Val Lys Lys Tyr Phe			
115	120	125	
Gln Arg Ile Thr Leu Tyr Leu Met Glu Lys Lys Tyr Ser Pro Cys Ala			
130	135	140	
Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser Phe Ser Thr			
145	150	155	160
Asn Leu Gln Lys Arg Leu Arg Arg Lys Asp			
165	170		
 <210> 17			
<211> 166			
<212> PRT			
<213> Homo sapiens			
 <220>			
<223> Human IFN alpha-16 protein			
 <400> 17			
Cys Asp Leu Pro Gln Thr His Ser Leu Gly Asn Arg Arg Ala Leu Ile			
1	5	10	15
Leu Leu Ala Gln Met Gly Arg Ile Ser His Phe Ser Cys Leu Lys Asp			
20	25	30	
Arg Tyr Asp Phe Gly Phe Pro Gln Glu Val Phe Asp Gly Asn Gln Phe			
35	40	45	
Gln Lys Ala Gln Ala Ile Ser Ala Phe His Glu Met Ile Gln Gln Thr			
50	55	60	
Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Ala Trp Asp Glu Thr			
65	70	75	80
Leu Leu Asp Lys Phe Tyr Ile Glu Leu Phe Gln Gln Leu Asn Asp Leu			
85	90	95	
Glu Ala Cys Val Thr Gln Glu Val Gly Val Glu Glu Ile Ala Leu Met			
100	105	110	
Asn Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr			
115	120	125	
Leu Tyr Leu Met Gly Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val			
130	135	140	
Arg Ala Glu Ile Met Arg Ser Phe Ser Phe Ser Thr Asn Leu Gln Lys			
145	150	155	160
Gly Leu Arg Arg Lys Asp			
165			

<210> 18
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<223> Human IFN alpha-17 protein

<400> 18
Cys Asp Leu Pro Gln Thr His Ser Leu Gly Asn Arg Arg Ala Leu Ile
1 5 10 15

Leu Leu Ala Gln Met Gly Arg Ile Ser Pro Phe Ser Cys Leu Lys Asp
20 25 30

Arg His Asp Phe Gly Leu Pro Gln Glu Glu Phe Asp Gly Asn Gln Phe
35 40 45

Gln Lys Thr Gln Ala Ile Ser Val Leu His Glu Met Ile Gln Gln Thr
50 55 60

Phe Asn Leu Phe Ser Thr Glu Asp Ser Ser Ala Ala Trp Glu Gln Ser
65 70 75 80

Leu Leu Glu Lys Phe Ser Thr Glu Leu Tyr Gln Gln Leu Asn Asn Leu
85 90 95

Glu Ala Cys Val Ile Gln Glu Val Gly Met Glu Glu Thr Pro Leu Met
100 105 110

Asn Glu Asp Ser Ile Leu Ala Val Arg Lys Tyr Phe Gln Arg Ile Thr
115 120 125

Leu Tyr Leu Thr Glu Lys Tyr Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Ile Met Arg Ser Leu Ser Phe Ser Thr Asn Leu Gln Lys
145 150 155 160

Ile Leu Arg Arg Lys Asp
165

<210> 19
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<223> Human IFN alpha-21 protein

<400> 19
Cys Asp Leu Pro Gln Thr His Ser Leu Gly Asn Arg Arg Ala Leu Ile
1 5 10 15

Leu Leu Ala Gln Met Gly Arg Ile Ser Pro Phe Ser Cys Leu Lys Asp

20	25	30
Arg His Asp Phe Gly Phe Pro Gln Glu Glu Phe Asp Gly Asn Gln Phe		
35	40	45
Gln Lys Ala Gln Ala Ile Ser Val Leu His Glu Met Ile Gln Gln Thr		
50	55	60
Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser Ala Thr Trp Glu Gln Ser		
65	70	75
Leu Leu Glu Lys Phe Ser Thr Glu Leu Asn Gln Gln Leu Asn Asp Leu		
85	90	95
Glu Ala Cys Val Ile Gln Glu Val Gly Val Glu Glu Thr Pro Leu Met		
100	105	110
Asn Val Asp Ser Ile Leu Ala Val Lys Lys Tyr Phe Gln Arg Ile Thr		
115	120	125
Leu Tyr Leu Thr Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Val Val		
130	135	140
Arg Ala Glu Ile Met Arg Ser Phe Ser Leu Ser Lys Ile Phe Gln Glu		
145	150	155
Arg Leu Arg Arg Lys Glu		
165		
<210> 20		
<211> 172		
<212> PRT		
<213> Homo sapiens		
<220>		
<223> Human IFN delta-1 protein		
<400> 20		
Cys Asp Leu Ser Gln Asn His Val Leu Val Gly Arg Lys Asn Leu Arg		
1	5	10
15		
Leu Leu Asp Glu Met Arg Arg Leu Ser Pro His Phe Cys Leu Gln Asp		
20	25	30
Arg Lys Asp Phe Ala Leu Pro Gln Glu Met Val Glu Gly Gly Gln Leu		
35	40	45
Gln Glu Ala Gln Ala Ile Ser Val Leu His Glu Met Leu Gln Gln Ser		
50	55	60
Phe Asn Leu Phe His Thr Glu His Ser Ser Ala Ala Trp Asp Thr Thr		
65	70	75
Leu Leu Glu Pro Cys Arg Thr Gly Leu His Gln Gln Leu Asp Asn Leu		
85	90	95

Asp	Ala	Cys	Leu	Gly	Gln	Val	Met	Gly	Glu	Glu	Asp	Ser	Ala	Leu	Gly
							100		105						110
Arg	Thr	Gly	Pro	Thr	Leu	Ala	Leu	Lys	Arg	Tyr	Phe	Gln	Gly	Ile	His
								115		120					125
Val	Tyr	Leu	Lys	Glu	Lys	Gly	Tyr	Ser	Asp	Cys	Ala	Trp	Glu	Thr	Val
								130		135					140
Arg	Leu	Glu	Ile	Met	Arg	Ser	Phe	Ser	Ser	Leu	Ile	Ser	Leu	Gln	Glu
								145		150					160
Arg	Leu	Arg	Met	Met	Asp	Gly	Asp	Leu	Ser	Ser	Pro				
								165		170					

<210> 21
<211> 172
<212> PRT
<213> Homo sapiens

<220>
<223> Human IFN omega-1 protein

<400> 21																
Cys	Asp	Leu	Pro	Gln	Asn	His	Gly	Leu	Leu	Ser	Arg	Asn	Thr	Leu	Val	
1			5						10						15	
Leu	Leu	His	Gln	Met	Arg	Arg	Ile	Ser	Pro	Phe	Leu	Cys	Leu	Lys	Asp	
				20				25							30	
Arg	Arg	Asp	Phe	Arg	Phe	Pro	Gln	Glu	Met	Val	Lys	Gly	Ser	Gln	Leu	
				35				40							45	
Gln	Lys	Ala	His	Val	Met	Ser	Val	Leu	His	Glu	Met	Leu	Gln	Gln	Ile	
				50				55							60	
Phe	Ser	Leu	Phe	His	Thr	Glu	Arg	Ser	Ser	Ala	Ala	Trp	Asn	Met	Thr	
				65				70							80	
Leu	Leu	Asp	Gln	Leu	His	Thr	Gly	Leu	His	Gln	Gln	Leu	Gln	<u>His</u>	Leu	
				85				90							95	
Glu	Thr	Cys	Leu	Leu	Gln	Val	Val	Gly	Glu	Gly	Glu	Ser	Ala	Gly	Ala	
				100				105							110	
Ile	Ser	Ser	Pro	Ala	Leu	Thr	Leu	Arg	Arg	Tyr	Phe	Gln	Gly	Ile	Arg	
				115				120							125	
Val	Tyr	Leu	Lys	Glu	Lys	Tyr	Ser	Asp	Cys	Ala	Trp	Glu	Val	Val		
				130				135							140	
Arg	Met	Glu	Ile	Met	Lys	Ser	Leu	Phe	Leu	Ser	Thr	Asn	Met	Gln	Glu	
				145				150							160	
Arg	Leu	Arg	Ser	Lys	Asp	Arg	Asp	Leu	Gly	Ser	Ser					
				165				170								

<210> 22
<211> 166
<212> PRT
<213> Mus musculus

<220>
<223> Mouse IFN alpha-1 protein

<400> 22
Cys Asp Leu Pro Gln Thr His Asn Leu Arg Asn Lys Arg Ala Leu Thr
1 5 10 15

Leu Leu Val Gln Met Arg Arg Leu Ser Pro Leu Ser Cys Leu Lys Asp
20 25 30

Arg Lys Asp Phe Gly Phe Pro Gln Glu Lys Val Asp Ala Gln Gln Ile
35 40 45

Lys Lys Ala Gln Ala Ile Pro Val Leu Ser Glu Leu Thr Gln Gln Ile
50 55 60

Leu Asn Ile Phe Thr Ser Lys Asp Ser Ser Ala Ala Trp Asn Ala Thr
65 70 75 80

Leu Leu Asp Ser Phe Cys Asn Asp Leu His Gln Gln Leu Asn Asp Leu
85 90 95

Gln Gly Cys Leu Met Gln Gln Val Gly Val Gln Glu Phe Pro Leu Thr
100 105 110

Gln Glu Asp Ala Leu Leu Ala Val Arg Lys Tyr Phe His Arg Ile Thr
115 120 125

Val Tyr Leu Arg Glu Lys Lys His Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Val Trp Arg Ala Leu Ser Ser Ser Ala Asn Val Leu Gly
145 150 155 160

Arg Leu Arg Glu Glu Lys
165

<210> 23
<211> 167
<212> PRT
<213> Mus musculus

<220>
<223> Mouse IFN alpha-2 protein

<400> 23
Cys Asp Leu Pro His Thr Tyr Asn Leu Arg Asn Lys Arg Ala Leu Lys
1 5 10 15

Val Leu Ala Gln Met Arg Arg Leu Pro Phe Leu Ser Cys Leu Lys Asp
20 25 30

Arg Gln Asp Phe Gly Phe Pro Leu Glu Lys Val Asp Asn Gln Gln Ile
35 40 45

Gln Lys Ala Gln Ala Ile Pro Val Leu Arg Asp Leu Thr Gln Gln Thr
50 55 60

Leu Asn Leu Phe Thr Ser Lys Ala Ser Ser Ala Ala Trp Asn Ala Thr
65 70 75 80

Leu Leu Asp Ser Phe Cys Asn Asp Leu His Gln Gln Leu Asn Asp Leu
85 90 95

Gln Thr Cys Leu Met Gln Gln Val Gly Val Gln Glu Pro Pro Leu Thr
100 105 110

Gln Glu Asp Ala Leu Leu Ala Val Arg Lys Tyr Phe His Arg Ile Thr
115 120 125

Val Tyr Leu Arg Glu Lys Lys His Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Val Trp Arg Ala Leu Ser Ser Ser Val Asn Leu Leu Pro
145 150 155 160

Arg Leu Ser Glu Glu Lys Glu
165

<210> 24

<211> 162

<212> PRT

<213> Mus musculus

<220>

<223> Mouse IFN alpha-4 protein

<400> 24

Cys Asp Leu Pro His Thr Tyr Asn Leu Gly Asn Lys Arg Ala Leu Thr
1 5 10 15

Val Leu Glu Glu Met Arg Arg Leu Pro Pro Leu Ser Cys Leu Lys Asp
20 25 30

Arg Lys Asp Phe Gly Phe Pro Leu Glu Lys Val Asp Asn Gln Gln Ile
35 40 45

Gln Lys Ala Gln Ala Ile Leu Val Leu Arg Asp Leu Thr Gln Gln Ile
50 55 60

Leu Asn Leu Phe Thr Ser Lys Asp Leu Ser Ala Thr Trp Asn Ala Thr
65 70 75 80

Leu Leu Asp Ser Phe Cys Asn Asp Leu His Gln Gln Leu Asn Asp Leu
85 90 95

Lys Ala Cys Val Met Gln Glu Pro Pro Leu Thr Gln Glu Asp Ser Leu
100 105 110

Leu Ala Val Arg Thr Tyr Phe His Arg Ile Thr Val Tyr Leu Arg Lys
115 120 125

Lys Lys His Ser Leu Cys Ala Trp Glu Val Ile Arg Ala Glu Val Trp
130 135 140

Arg Ala Leu Ser Ser Ser Thr Asn Leu Leu Ala Arg Leu Ser Glu Glu
145 150 155 160

Lys Glu

<210> 25
<211> 166
<212> PRT
<213> Mus musculus

<220>
<223> Mouse IFN alpha-5 protein

<400> 25
Cys Asp Leu Leu Gln Thr His Asn Leu Arg Asn Lys Arg Ala Leu Thr
1 5 10 15

Leu Leu Val Lys Met Arg Arg Leu Ser Pro Leu Ser Cys Leu Lys Asp
20 25 30

Arg Lys Asp Phe Gly Phe Pro Gln Glu Lys Val Gly Ala Gln Gln Ile
35 40 45

Gln Glu Ala Gln Ala Ile Pro Val Leu Ser Glu Leu Thr Gln Gln Val
50 55 60

Leu Asn Ile Phe Thr Ser Lys Asp Ser Ser Ala Ala Trp Asn Ala Thr
65 70 75 80

Leu Leu Asp Ser Phe Cys Asn Glu Val His Gln Gln Leu Asn Asp Leu
85 90 95

Lys Ala Cys Val Met Gln Gln Val Gly Val Gln Glu Ser Pro Leu Thr
100 105 110

Gln Glu Asp Ser Leu Leu Ala Val Arg Lys Tyr Phe His Arg Ile Thr
115 120 125

Val Tyr Leu Arg Glu Lys Lys His Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Val Trp Arg Ala Leu Ser Ser Ser Val Asn Leu Leu Ala
145 150 155 160

Arg Leu Ser Lys Glu Glu

<210> 26
<211> 166
<212> PRT
<213> Mus musculus

<220>
<223> Mouse IFN alpha-6 protein

<400> 26
Cys Asp Leu Pro Gln Thr His Asn Leu Arg Asn Lys Arg Ala Leu Thr
1 5 10 15

Leu Leu Val Lys Met Arg Arg Leu Ser Pro Leu Ser Cys Leu Lys Asp
20 25 30

Arg Lys Asp Phe Gly Phe Pro Gln Glu Lys Val Gly Ala Gln Gln Ile
35 40 45

Gln Glu Ala Gln Ala Ile Pro Val Leu Thr Glu Leu Thr Gln Gln Ile
50 55 60

Leu Thr Leu Phe Thr Ser Lys Asp Ser Ser Ala Ala Trp Asn Ala Thr
65 70 75 80

Leu Leu Asp Ser Phe Cys Asn Asp Leu His Gln Leu Leu Asn Asp Leu
85 90 95

Gln Gly Cys Leu Met Gln Gln Val Glu Ile Gln Ala Leu Pro Leu Thr
100 105 110

Gln Glu Asp Ser Leu Leu Ala Val Arg Thr Tyr Phe His Arg Ile Thr
115 120 125

Val Phe Leu Arg Glu Lys Lys His Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Val Trp Arg Ala Leu Ser Ser Ala Lys Leu Leu Ala
145 150 155 160

Arg Leu Asn Glu Asp Glu
165

<210> 27
<211> 167
<212> PRT
<213> Mus musculus

<220>
<223> Mouse IFN alpha-7 protein

<400> 27
Cys Asp Leu Pro Gln Thr His Asn Leu Arg Asn Lys Arg Ala Leu Thr
1 5 10 15

Leu Leu Val Lys Met Arg Arg Leu Ser Pro Leu Ser Cys Leu Lys Asp
20 25 30

Arg Lys Asp Phe Gly Phe Pro Gln Ala Lys Val Asp Ala Gln Gln Ile
35 40 45

Gln Glu Ala Gln Ala Ile Pro Val Leu Ser Glu Leu Thr Gln Gln Ile
50 55 60

Leu Asn Ile Phe Thr Ser Lys Asp Ser Ser Ala Ala Trp Asn Ala Thr
65 70 75 80

Leu Leu Asp Ser Val Cys Asn Asp Leu His Gln Gln Leu Asn Asp Leu
85 90 95

Gln Gly Cys Leu Met Gln Glu Val Gly Val Gln Glu Leu Ser Leu Thr
100 105 110

Gln Glu Asp Ser Leu Leu Ala Val Arg Lys Tyr Phe His Arg Ile Thr
115 120 125

Val Phe Leu Arg Glu Lys Lys His Ser Pro Cys Ala Trp Glu Val Val
130 135 140

Arg Ala Glu Ile Trp Arg Ala Leu Ser Ser Ala Asn Leu Ala
145 150 155 160

Arg Leu Ser Glu Lys Lys Glu
165

<210> 28

<211> 166

<212> PRT

<213> Mus musculus

<220>

<223> Mouse IFN alpha-8 protein

<400> 28

Cys Asp Leu Pro Gln Thr His Asn Leu Arg Asn Lys Arg Ala Leu Thr
1 5 10 15

Leu Leu Val Lys Met Arg Arg Leu Ser Pro Leu Ser Cys Leu Lys Asp
20 25 30

Arg Lys Asp Phe Gly Phe Pro Gln Glu Lys Val Gly Ala Gln Gln Ile
35 40 45

Gln Glu Ala Gln Ala Ile Pro Val Leu Thr Glu Leu Thr Gln Gln Ile
50 55 60

Leu Ala Leu Phe Thr Ser Lys Asp Ser Ser Ala Ala Trp Asn Ala Thr
65 70 75 80

Leu Leu Asp Ser Phe Cys Asn Asp Leu His Gln Leu Leu Asn Asp Leu

85	90	95
Gln Gly Cys Leu Met Gln Gln Val Glu Ile Gln Ala Leu Pro Leu Thr 100	105	110
Gln Glu Asp Ser Leu Leu Ala Val Arg Thr Tyr Phe His Arg Ile Thr 115	120	125
Val Phe Leu Arg Glu Lys Lys His Ser Pro Cys Ala Trp Glu Val Val 130	135	140
Arg Ala Glu Val Trp Arg Ala Leu Ser Ser Ala Lys Leu Leu Ala 145	150	155
Arg Leu Asn Glu Asp Glu 165		
<210> 29		
<211> 167		
<212> PRT		
<213> Mus musculus		
<220>		
<223> Mouse IFN alpha-9 protein		
<400> 29		
Cys Asp Leu Pro Gln Thr His Asn Leu Arg Asn Lys Lys Ile Leu Thr 1	5	10
15		
Leu Leu Ala Gln Met Arg Arg Leu Ser Pro Leu Ser Cys Leu Lys Asp 20	25	30
Arg Lys Asp Phe Gly Phe Pro Gln Glu Lys Val Asp Ala Gln Gln Ile 35	40	45
Gln Glu Ala Gln Ala Ile Pro Val Leu Ser Glu Leu Thr Gln Gln Ile 50	55	60
Leu Thr Leu Phe Thr Ser Lys Asp Ser Ser Ala Ala Trp Asn Ala Thr 65	70	75
80		
Leu Leu Asp Ser Phe Cys Thr Gly Leu His Gln Leu Leu Asn Asp Leu 85	90	95
Gln Gly Cys Leu Met Gln Leu Val Gly Met Lys Glu Leu Pro Leu Thr 100	105	110
Gln Glu Asp Ser Gln Leu Ala Met Lys Lys Tyr Phe His Arg Ile Thr 115	120	125
Val Tyr Leu Arg Glu Lys Lys His Ser Pro Cys Ala Trp Glu Val Val 130	135	140
Arg Ala Glu Val Trp Arg Ala Leu Ser Ser Val Asn Leu Leu Ala 145	150	155
160		

Arg Leu Ser Glu Glu Lys Glu
165

Arg Leu Ser Glu Glu Lys Glu